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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,361	09/11/2003	Hooman Honary	P16342	5503
7590	01/24/2006		EXAMINER	
Buckley, Maschoff, Talwalkar & Allison LLC Attorney for Intel Corporation Five Elm Street New Canaan, CT 06840			RIZK, SAMIR WADIE	
			ART UNIT	PAPER NUMBER
			2133	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/660,361	HONARY ET AL.
	Examiner Sam Rizk	Art Unit 2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 11 September 2003.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-23 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 11 September 2003 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All
  - b) Some \*
  - c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

***DETAILED ACTIONS***

- Claims 1-23 have been submitted for examination
- Claims 1-23 have been rejected

***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the ACS engine, operand polarity register (OPR) and operand select register as described in the specification in page 6, line 14. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. Regarding claims 4 and 14, the phrase "**some**" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 8, 11-13, 18 and 21-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Scheuermann US patent no. 6577678 (Hereinafter Scheuermann).
4. In regard to claim 1, Scheuermann teaches:
  - An apparatus comprising:
  - an instruction decoder;  
(Note: Col. 3, lines (18 & 19) in Scheuermann)
  - at least one control register coupled to the instruction decoder; and  
(Note: Col. 3, lines (28 & 29) in Scheuermann)

- an add-compare-select (ACS) engine coupled to the at least one control register;
- wherein the instruction decoder is operative to control the ACS engine to perform Viterbi decoding in response to the instruction decoder receiving a first instruction, and the instruction decoder is further operative to control the ACS engine to perform turbo decoding in response to the instruction decoder receiving a second instruction.

(Note: Col 1, lines (66 &67) in Scheuermann)

5. In regard to claim 2, Scheuermann teaches:

- The apparatus of claim 1, wherein the ACS engine includes:  
(Note: Fig. 2, reference character 250A through 250Z in Scheuermann)
- a plurality of ACS units to perform ACS operations;  
(Note: Col. 8, lines (66 & 67) in Scheuermann)
- a branch metric register coupled to the ACS units to supply branch metric data to the ACS units; and  
(Note: Col. 9, line (3) in Scheuermann)
- a plurality of accumulators coupled to the ACS units to store results of the ACS operations performed by the ACS units.  
(Note: Col. 10, line (31) in Scheuermann)

6. In regard to claim 3, Scheuermann teaches:

- The apparatus of claim 2, further comprising:

- a memory coupled to the ACS units, to the branch metric register, and to the accumulators.

(Note: Fig. 2, reference characters 250A and 250B in Scheuermann)

7. In regard to claim 8, Scheuermann teaches:

- The apparatus of claim 2, wherein each of the ACS units is capable of performing butterfly operations.

(Note: Abstract, line 12 in Scheuermann)

8. In regard to claim 11, Scheuermann teaches:

- A system comprising:
  - a forward error correction decoder; and
  - a speaker coupled (Note: FIG. 3, reference (Downstream interface (Vocoder ACM) in Scheuermann) to the forward error correction decoder to audibly reproduce corrected data output from the forward error correction decoder; wherein the forward error correction decoder includes:
    - an instruction decoder,
  - at least one control register coupled to the instruction decoder; and
  - an add-compare-select (ACS) engine coupled to the at least one control register;

(Note: Col. 3, lines (18 & 19) in Scheuermann)

(Note: Col. 3, lines (28 & 29) in Scheuermann)

- wherein the instruction decoder is operative to control the ACS engine to perform Viterbi decoding in response to the instruction decoder receiving a first instruction, and the instruction decoder is further operative to control the ACS engine to perform turbo decoding in response to the instruction decoder receiving a second instruction.

(Note: Col 1, lines (66 &67) in Scheuermann)

9. Claim 12 is rejected for the same reasons as claim 2.

10. Claim 13 is rejected for the same reasons as claim 3.

11. Claim 18 is rejected for the same reasons as claim 8

12. Claim 21 is rejected for the same reasons as claim 1.

13. In regard to claim 22, Scheuermann teaches:

- The method of claim 21, wherein the first instruction is provided to the instruction decoder if voice data is to be decoded by the forward error correction decoder.

(Note: Col. 5, lines (30) and (31) in Scheuermann)

14. In regard to claim 23, Scheuermann teaches:

- The method of claim 21, wherein the second instruction is provided to the instruction decoder if image data is to be decoded by the forward error correction decoder.

(Note: Col. 8, lines (1-25) in Scheuermann)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claim 4-7, 9, 10, 14-17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheuermann as applied to claims 1-3 and 8 above, and further in view of Howard et al. US publication no. 2005/0044327 (Hereinafter Howard). Both Scheuermann and Howard applications are assigned to QuickSilver Technology.

12. In regard to claim 4, Scheuermann substantially teaches all the limitations in claims 1-3.

However, Scheuermann does not explicitly teach:

- The apparatus of claim 3, wherein in a first mode of operating the apparatus at least some operands are supplied to the ACS units from

the accumulators and in a second mode of operating the apparatus at least some operands are supplied to the ACS units from the memory.

Howard, in an analogous art, shared memory system in an adaptive computing architecture, discloses block diagrams illustrating specific computational elements, forming computational units for performance of different algorithms.

(Note: Figs 5A through 5E in Howard)

Fig. 5A in Howard discloses operands are supplied to the ACS units from the accumulators and Fig. 5E in Howard discloses operands are supplied to the ACS units from the memory.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Scheuermann with the teaching of Howard include implementation and use of a shared memory in an adaptive computing architecture.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized the need for asynchronous, independent and multiple process shared memory system in an adaptive computing architecture.

13. In regard to claim 5, Howard teaches:

- The apparatus of claim 2, wherein the plurality of accumulators includes four accumulators.

(Note: Fig. 5A, reference characters (340),(345),(350) and (355) in Howard)

14. In regard to claim 6, Howard teaches;

- The apparatus of claim 5, wherein each of the accumulators includes eight units, each unit being capable of storing 48 bits.

(Note: Sections [0097] and [0098] in Howard)

15. In regard to claim 7, Howard teaches:

- The apparatus of claim 6, wherein the 48 bits stored in each accumulator unit include 16 guard bits.

(Note: Fig. 16 in Howard)

16. In regard to claim 9, Howard teaches:

- The apparatus of claim 8, wherein:
- a final add of a butterfly operation performed by one of the ACS units is a two-operand add if the ACS engine is performing Viterbi decoding; and
- the final add of the butterfly operation is a three-operand add if (a) the ACS engine is performing turbo decoding and (b) a certain intermediate result is obtained during the final add.

(Note: Section [0100] in Howard)

17. In regard to claim 10, Howard teaches:

- The apparatus of claim 9, wherein an operand for the three-operand add is looked up in a look up table if (a) the ACS engine is performing turbo decoding and (b) the certain intermediate result is obtained during the final add.

(Note: FIG. 8, reference character (402) and Col. 9, lines (5-20) in  
Scheuermann)

18. Claim 14 is rejected for the same reasons as claim 4.
19. Claim 15 is rejected for the same reasons as claim 5.
20. Claim 16 is rejected for the same reasons as claim 6.
21. Claim 17 is rejected for the same reasons as claim 7.
22. Claim 19 is rejected for the same reasons as claim 9.
23. Claim 20 is rejected for the same reasons as claim 10.

### ***Conclusion***

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
  - Master et al. US publication no. US 2003/0154357 teaches Adaptive integrated circuitry with heterogeneous and reconfigurable matrices of diverse and adaptive computational units having fixed application specific computational elements.
  - Chun et al. US publication no. 2005/0034051 teaches reconfigurable Viterbi/turbo decoder.
  - D'Arcy et al. teaches high speed arithmetic operations for use in turbo decoders.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

Sam Rizk, MSEE, ABD

Examiner

ART UNIT 2133

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Aug 6 2006  
Cynthia Bentk